



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/703,689	10/31/2000	Robert P. Ryan	K35A0680	2830

26332 7590 07/17/2003

WESTERN DIGITAL CORP.
20511 LAKE FOREST DRIVE
C205 - INTELLECTUAL PROPERTY DEPARTMENT
LAKE FOREST, CA 92630

EXAMINER

WONG, KIN C

ART UNIT PAPER NUMBER

2651

DATE MAILED: 07/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/703,689

Applicant(s)

RYAN, ROBERT P.

Examiner

K. Wong

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

This is a response to the remarks filed on 4/28/03.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims (1, 3-4 and 6) are rejected under 35 U.S.C. 102(e) as being anticipated by Hansen (6163430).

Regarding claim 1: Hansen discloses a disk drive (element 10 in figure 1 of Hansen) including;

- (a) a disk (element 30 in figure 1);
- (b) a head (see col. 2, lines 56-58 of Hansen);
- (c) an actuator arm for actuating the head radially over the disk (see col. 2, lines 65-67 of Hansen);

(d) a voice coil motor (VCM) for rotating the actuator arm about a pivot, the VCM comprising a coil that comprising a VCM resistance R (see col. 4, line 1 of Hansen);

(e) a back EMF voltage detector for measuring a back EMF voltage across the coil (a back EMF voltage detector is considered inherent because Hansen describes back-EMF function in col. 3, lines 65-67 which requires a determination or detection thereof);

(f) a current detector for detecting a current I flowing through the coil (a current detector is considered inherent because Hansen describes the determination that requires a detection of the current in col. 4, line 2-3 of Hansen);

(g) an IR voltage detector, responsive to the current I detected by the current detector, for detecting an IR voltage proportional to the current I times the VCM resistance R (IR voltage detector is considered inherent because in col. 4, line 4 of Hansen where Hansen describes the current for the back-EMF which includes the IR voltage and the detection thereof);

(h) a voltage compensator for substantially canceling the IR voltage from the measured back EMF voltage to generate a compensated back EMF voltage (in col. 3, lines 5-20; col. 3, line 52 to col. 4, line 9 and col. 4, line 60 to col. 5, line 14 of Hansen where Hansen describes the drive compensation which includes the voltage determination for the VCM);

(i) a control voltage generator, responsive the compensated back EMF voltage, for generating a control voltage applied to the coil to generate the current I flowing

Art Unit: 2651

through the coil (see col. 3, line 52 to col. 4, line 9 and col. 4, line 60 to col. 5, line 14 of Hansen); and

(j) a stall detector for comparing the current I detected by the current detector to a threshold, wherein a VCM stall condition is detected if the current I exceeds the threshold for a predetermined interval (Hansen discloses determination of the stalling of the VCM in col. 4, line 5 to col. 5, line 34).

Regarding claim 3: Hansen teaches that wherein the stall detector including a clock and a counter for counting a number of clock cycles the current I exceeds the threshold (in col. 4, line 60 to col. 5, line 34; col. 3, lines 36-44 and col. 4, lines 5-8 of Hansen).

Regarding claims 4 and 6: method claims (4 and 6) are drawn to the method of using the corresponding apparatus claimed in claims (1 and 3). Therefore method claims (4 and 5) correspond to apparatus claims (1 and 3) and are rejected for the same reasons of anticipation as used above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2651

Claims (2 and 5) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansen (61634300 in view of Jeffrey et al (6021015).

Regarding claims 2 and 5: the reason for Hansen is stated in above rejections. Although Hansen discloses VCM current determinations, Hansen is silent on a sensing resistor in series with the coil for current detection. Jeffrey et al is relied on for teachings of a resistor in series with the VCM coil for sensing the current (see element 310 in figure 2 and col. 3, lines 29-36 of Jeffrey et al).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the current sensing of Hansen with a sensing resistor as taught by Jeffrey et al. The rational is as follows: one of ordinary skill in the art would have been motivated to provide an actual sensed current value that is provided to the VCM.

Regarding claim 5: method claim 5 is drawn to the method of using the corresponding apparatus claimed in claim 2. Therefore method claim 5 corresponds to apparatus claim 2 and is rejected for the same reasons of obviousness as used above.

Response to Arguments

Applicant's arguments filed 4/28/03 have been fully considered but they are not fully persuasive.

Regarding to Hansen et al in the remarks filed on 4/28/03: applicant asserts that Hansen et al is purely analytical of the cited limitations of the instant invention, which

without the means or the elements to implement the analytical functions as cited. The analytical functions are mathematical representations of the means or the elements as recited in the instant invention which still in the metes and the breath of the functional elements in the arts that meets the software driven instant invention. Since the instant invention is driven by software/firmware, the implementation of the analytical functions is inherently with firmware, which apparatus of Hansen et al disclosed in col. 1, lines 14-63 of the background of Hansen et al. Therefore, the Hansen et al is a proper reference.

Regarding to the stall detector in remarks filed on 4/28/03: applicant asserts that Hansen et al fails to disclose the stall detection (or detector) and with clock counter for the stall detection. Hansen et al discloses the stall detection (or representation or interpretation of the stall function) in col. 4, line 5 to col. 5, line 51 which is in line with the instant specification (on page 7, line 7 to page 8, line 2 of the specification). Furthermore, the timing element is disclosed in col. 4, line 60 to col. 5, line 34 of Hansen et al. Thus, Hansen et al does disclose the stall detection with a timing element.

Henceforth, the rejection of the claims stands.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Masuoka et al (5663846), Rowan et al (5781363) and Male (5982130) are cited for the backEMF and the current detections of the VCM.

Any inquiry concerning this communication should be directed to K. Wong whose telephone number is (703) 305-7772.

Application/Control Number: 09/703,689
Art Unit: 2651


Page 7

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Hudspeth, can be reached on (703) 308-4825. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Customer Service whose telephone number is (703) 306-0377.

Ckw

8 Jul 03



DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600